Materi Kuliah
MATRIKULASI

KOMPUTASI
dan
PEMROGRAMAN

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ubuntu

TOPIK 2:
KOMPUTASI

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TOPIK 2

KOMPUTASI
Computation

Dari: http://en.wikipedia.org/

(***not a reliable source, ...***

.... but it's good for a quick START)

computation (plural computations):

1. The act or process of ***computing;*** calculation; reckoning.
2. The result of computation; the amount computed.

Computation is a general term for any type of **information processing.** This includes phenomena .....

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.....ranging from **human thinking** to **calculations** with a more narrow meaning. **Computation** is a **process** following **a well-defined model** that is understood and can be **expressed in an algorithm, protocol**, network **topology**, etc. Computation is also a major subject matter of computer science: it **investigates** what **can** or **cannot** be done in a computational manner.

- 1 Classes of computation
- 2 Computations as a physical phenomenon
- 3 Mathematical models of computation
- 4 History

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TOPIK 2

Classes of computation
Computation can be classified by at least three orthogonal criteria: **digital** vs **analog**, **sequential** vs **parallel** vs **concurrent**, **batch** vs **interactive**. In practice, digital computation is often used to simulate natural processes (for example, Evolutionary computation), including those that are more naturally described by analog models of computation (for example, Artificial neural network). In this situation, it is important to distinguish between the mechanism of computation and the simulated model.

Computations as a physical phenomenon
A computation can be seen as a purely physical phenomenon occurring inside a closed physical system called a computer. Examples of such physical systems include digital computers, quantum computers, DNA computers, molecular computers, analog computers or wetware computers. This point of view is the one adopted by the branch of theoretical physics called the physics of computation. An even more radical point of view is the postulate of digital physics that the evolution of the universe itself is a computation - *Pancomputationalism*.

Mathematical models of computation
In the theory of computation, a diversity of mathematical models of computers have been developed. Typical mathematical models of computers are the following:

- *State models* including Turing Machine, Push-down automaton, Finite state automaton, and PRAM
- *Functional models* including lambda calculus
- *Logical models* including logic programming
- *Concurrent models* including Actor model and process calculi

History
The word computation has an archaic meaning (from its Latin etymological roots), but the word has come back in use with the arising of a new scientific discipline: *computer science*.

See : "COMPUTING"

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Computing

From Wikipedia, the free encyclopedia

Computing is usually defined as the activity of using and developing computer technology, computer hardware and software. It is the computer-specific part of information technology.

Computer science (or *computing science*) is the study and the science of the theoretical foundations of information and computation and their implementation and application in computer systems.

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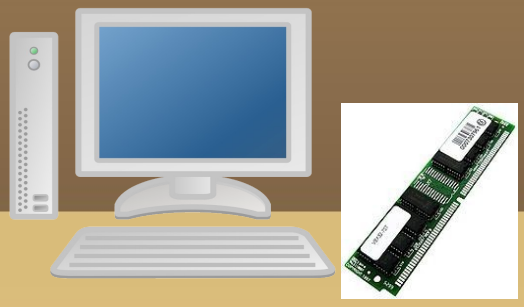

Computing Curricula 2005[1] defined **computing**:

to mean any goal-oriented activity **requiring**, **benefiting from**, or **creating computers**. Thus, computing includes:

- designing and building hardware and software systems for a wide range of purposes;
- processing, structuring, and managing various kinds of information;
- doing scientific studies using computers;
- making computer systems behave intelligently;
- creating and using communications and entertainment media;
- finding and gathering information relevant to any particular purpose,
- and so on.

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Other Definitions

The term *computing* has sometimes been narrowly defined, as in a 1989 ACM report on Computing as a Discipline[2]:

The *discipline of computing* is the systematic study of **algorithmic processes** that describe and transform **information**: their theory, analysis, design, efficiency, implementation, and application. The fundamental question underlying all computing is:

'What can be (efficiently) automated?'

Computing Curricula 2005[1] also recognizes that the meaning of computing depends on the context:-

Computing also has other meanings that are more specific, based on the context in which the term is used. For example, an information systems specialist will view computing somewhat differently from a software engineer. Regardless of the context, doing computing well can be complicated and difficult. Because society needs people to do computing well, we must think of computing not only as a profession but also as a discipline.

The term *computing* is also **synonymous** with *counting* and *calculating*. In earlier times it was used in reference to mechanical computing machines.

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Science and theory

- Computer science
- Theory of computation
- Computational models
- Scientific computing
- Metacomputing
- Topological computing
- Autonomic Computing

- Digital Bibliography & Library Project, as of July 2007, lists **over 910 000 bibliographic entries** on computer science and **several thousand links** to the homepages of *computer scientists*

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TOPIK 2 (contoh)
Komputasi

CONTOH 1

Carilah nilai **x** (akurat sampai 5 digit di belakang koma) di antara **1** dan **2** yang memenuhi persamaan kuadrat:

$$x^2 - 2 = 0$$

CONTOH 2

Tentukan bilangan rasional **b/p** yang paling mewakili nilai

$$\pi = 3{,}14159265358979$$

dengan ketentuan:

b = bilangan bulat antara 3p dan 4p

p = bilangan prima lebih kecil dari 20

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Next .....

Topik 3

PEMROGRAMAN

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